Remarks

The Examiner objected to Claim 12 as being an improper multi-dependent claim. Claim 12 has been amended to overcome the Examiner's objection. The Applicant respectfully requests that claim 12 now be considered on its merits.

Claims 1-8, 12 and 15-18 were rejected under 35 U.S.C. 103(a) as being obvious over Jurkiewicz in view of Robinson. The Applicant respectfully traverses this rejection.

The Examiner admits that Jurkiewicz fails to disclose the claimed step of determining a quantitative measure of the effectiveness of sunscreen. As has been previously discussed, Jurkiewicz fails to disclose, teach or even suggest the possibility of determining a quantitative measure of the effectiveness of sunscreen in the manner claimed in the instant application. Jurkiewicz fails to disclose that there is a quantitative reduction in ascorbate radical signal intensity in **proportion** with the reduction in radiation exposure and fails to disclose enough information to allow, or even suggest that ESR spectra from more than one skin sample be compared quantitatively.

In response to Applicant's prior arguments, the Examiner states in the "Response to arguments" dated January 6, 2009 at page 6, paragraph 2:

"That it was determined that Desferal acts not as a UV blocking agent but rather by an iron sequestration mechanism does not teach away from the claimed invention, but is merely a statement regarding its effectiveness, and therefore also reads on the claimed invention" and later paragraph 3 that "One skilled in the art, having observed decreased radical production from one photoprotective agent, would be motivated to test other

photoprotective agent, such as the photoprotective agent taught by Robinson, based on their functional equivalency of photoprotective agents".

The Examiner however overlooks why ESR is not conventionally used for quantitative determinations (the use of a first derivative spectrum). The mechanism by which Desferal acts is to chelate free heme iron, such that it becomes unavailable for redox cycling and catalysis of Fenton reactions. Fenton reactions generate free radicals, such as the hydroxyl radical, which then initiate lipid-peroxidation in membrane lipids, leading to the formation of lipid radical intermediates which are then trapped by DMPO (as described by Jurkiewicz and Buettner). This photoprotective action of Desferal is, therefore, unlikely to be in response to the applied dose. Although Jurkiwicz and Buettner did indeed demonstrate a reduction in ascorbate radical signal by Desferal, the relation to the applied concentration was not mentioned. A reliable quantitative method was not taught.

The prevention of heme catalyzed radical reactions is likely to be prevented by a stoichiometric amount of desferal sufficient to fully chelate the free heme liberated by UV radiation. A low quantity of free heme (the initiator) is required to initiate the chain reactions of lipid peroxidation, which lead to the detection of lipid radical intermediates, and the formation of lipid radicals cannot be assumed to be in direct response to the applied irradiation, or a quantitative reduction in proportion to applied heme chelator.

As the combination of prior art relied upon by the Examiner fails to disclose or teach each and every limitation of the claimed invention, the Applicant respectfully requests that the Examiner's rejection under 35 U.S.C. 103(a) be withdrawn.

Reconsideration of the application respectfully is requested. The foregoing amendment and remarks are believed to be responsive to every matter raised in the office action. If, however, some matter has been overlooked, an opportunity to correct the oversight would be appreciated.

Respectfully submitted,

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